PACKAGED ARTICLE COMPRISING A LENTICULAR LABEL

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FIELD OF THE INVENTION

The present invention relates to a packaged article comprising a lenticular label. More particularly, the present invention relates to a packaged article comprising a lenticular label adhered to the rear surface of a substantially transparent container. In one aspect, the present invention relates to a packaged article as described above which contains a liquid product which is at least semi-transparent. In another aspect, the present invention relates to a method of packaging a liquid product which is at least semi-transparent.

BACKGROUND OF THE INVENTION

Successful sales of a product depend not only on the quality of the product itself, but also on the uniqueness of the advertising for the product. Advertising takes many forms and spans many media, but often the best advertising is on the product itself or on its packaging. However, it is not uncommon for dozens of varieties of packaged articles to be placed next to one another on shelving in the store. To improve sales, bright color schemes and extravagant décor are often utilized to call potential customers' attention to the product. Some manufacturers utilize a particular shape, size, or color of packaging so that potential customers can readily differentiate their products from other similar products. Often, labels are attached to one or more of the exterior surfaces of the packaged article, such as on a container or a bottle, in order to appeal to and catch the attention of the customer. Labels are also used to provide information about the content of the packaged article, including details about the product and the identity of the manufacturer.

Labels that are intended to be applied to containers or bottles generally consist of a paper or plastic sheet, or the like, having a front face which has printed or reproduced thereon writing or designs intending to decorate the container or relating to the product contained in the container. The label is generally applied to the external surface of the container by spreading a suitable adhesive on the rear side thereof or by means of heat-shrinking of the plastic from which the label may be made. Usually, a label of the conventional type has a printing surface provided

with writing, designs, or images on its front face, whereas the rear face is entirely hidden or not visible, being solely intended to adhere to or be glued to the body of the container or the bottle.

Some have recognized that the face of the label adhered to a container can be advantageously utilized to convey information to the customer. At least one company prints pictorial images on the adhered side of the back label so as to be viewable through the front of a container. A combination of front and back images can be used to convey the source of the container and its contents and other pertinent information or further decoration. However, this configuration is limited in that any pertinent information or decoration is two-dimensional, as it is presented on a two-dimensional or planar face of a label made of a paper or plastic sheet or the like.

Others have recognized that labels and other decorative features can be inserted into and attached to an interior surface of a container or bottle or may even float in a liquid product in the container while being attached to an interior surface. Another type of label or decorative feature is one that can be inserted into and suspended within a container without being attached to an interior surface of the container. These configurations can allow for physically three-dimensional decorations. However, manufacture and assembly of such labels or decorative features can be more cumbersome and thus more costly than using conventional two-dimensional labels. Further, the degree of extravagance of the label or decorative feature is limited to its physical dimensions or physical design, which in turn limits the ability to appeal to, and catch the eye of, a customer.

As a result, there is a continuing need to provide improved aesthetics and better decoration of packaged articles which allows for distinctiveness and greater extravagance in design while maintaining the efficiency and cost-effectiveness of conventional manufacturing and assembly.

Recently, lenticular lens technology, which allows for multidimensional imaging on a two-dimensional or planar surface, has come into increasing use in product and point-of-purchase displays. Lenticular lenses are well known and commercially available. A lenticular lens can be incorporated into label assemblies that can be applied to objects, such as containers or bottles, using conventional labeling equipment, which allows for manufacturing and assembly efficiency to be maintained. Thus, lenticular technology is already in use on a variety of items, such as promotional buttons, magnets, coasters, collectibles, display posters, signs, menu boards, packaging on boxes, postcards, and business cards, as well as on point-of-purchase materials such as labels and the like. However, these applications have a common characteristic in that the lenticular technology has been applied generally as a lenticular lens with its rear face adhered to an exterior surface of a substrate and its front face, upon which a multidimensional image is

viewable, facing away from the substrate. Stated differently, a viewer views the lenticular lens through what can be termed a lens / air interface. For example, in this typical configuration, a lenticular lens is placed face-up on the outside of a container or a bottle.

While lenticular technology allows for multidimensional imaging on a two-dimensional or planar surface, which can provide improved aesthetics and better decoration of packaged articles, there are some shortcomings in its conventional application, particularly relating to packaging and point-of-purchase materials such as labels and the like. When viewing a multidimensional image of a lenticular lens through a lens / air interface, as is conventional in the variety of uses described above, the multidimensional image can appear blurred or out-of-focus. Often, a viewer will experience some degree of image degradation or other problem relating to clarity, sharpness, or quality of the image. This effect can reduce the aesthetics of, for example, packaging or point-of-purchase materials to which a lenticular lens is applied in a conventional manner.

As a result, there is a continuing need to provide improved quality of multidimensional images of lenticular lenses, such that blurring and image degradation are reduced and the overall visual and aesthetic effect is enhanced, particularly relating to the application of lenticular technology to packaging and point-of-purchase materials such as labels and the like.

Accordingly, a need still exists for improved aesthetics and better decoration of packaged articles which utilize lenticular lenses but reduce image blurring and enhance image quality, while maintaining the efficiency and cost-effectiveness of conventional manufacturing and assembly.

SUMMARY OF THE INVENTION

A packaged article is provided which comprises a substantially transparent container having a longitudinal axis, a first surface, and a second surface opposing said first surface; and a lenticular label having a front face and a rear face, wherein the front face of the lenticular label comprises a multidimensional image, and wherein the front face of the lenticular label is adhered in a facing relationship to the second surface of the substantially transparent container.

In one aspect of the present invention, a packaged article is provided which comprises a substantially transparent container having a longitudinal axis, a first surface, and a second surface opposing said first surface; a lenticular label comprising a front face, a rear face, a plurality of lenticules, and a plurality of interlaced component images; and a liquid product which is at least semi-transparent; wherein the front face of the lenticular label comprises a multidimensional image which imparts at least one visual illusion, and wherein the front face of

the lenticular label is adhered in a facing relationship to the rear surface of the substantially transparent container; and wherein the plurality of interlaced component images are arranged in correspondence with the plurality of lenticules such that the multidimensional image is viewable by a viewer substantially free of distortion through the first surface of the substantially transparent container and through the liquid product at a viewing distance which allows said viewer to perceive said visual illusion.

In another aspect of the invention, a method of packaging a liquid product which is at least semi-transparent is provided, said method comprising the steps of: (a) providing a substantially transparent container having a longitudinal axis, a first surface, and a second surface opposing said first surface; (b) providing a lenticular label having a front face and a rear face, wherein the front face comprises a multidimensional image which imparts at least one visual illusion; (c) adhering the front face of the lenticular label in a facing relationship to the second surface of the substantially transparent container; and (d) providing the liquid product which is at least semi-transparent in said substantially transparent container.

These and other features, aspects, and advantages of the present invention will become evident to those skilled in the art from a reading of the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

While the specification concludes with claims which particularly point out and distinctly claim the invention, it is believed the present invention will be better understood from the following description.

Packaged articles of the present invention include a lenticular label and a substantially transparent container. Each of these essential components, as well as preferred or optional components, is described in detail hereinafter.

A. Lenticular Label

A packaged article of the present invention includes a lenticular label. The lenticular label is included to provide the packaged article with unique decoration and improved aesthetics which may attract the attention of a potential customer and which also may convey information to a potential customer.

The lenticular label has a front face and a rear face. The front face of the lenticular label comprises a lenticular lens and thus contains a multidimensional image. As used herein, a "multidimensional image" is an image that imparts a visual illusion such as depth and/or motion to a viewer, and may include any combination of graphics, logos, text, or other visual

information. The rear face of the lenticular label comprises a label substrate, which can be made from paper, plastic, or any other suitable material.

Lenticular lenses are well known and commercially available. The manufacture of lenticular lenses forms no part of this invention. Lenticular lenses are thin, transparent lenses that are flat on a first, or rear side and include a plurality of parallel, linear, side-by-side lenticules – elongated, convex lenses – on a second, or front side. Each lenticule is typically a section of a long cylinder that focuses on, and extends over, the full length of a section of an underlying image. Typically, the underlying image is printed on or adhered to the flat, or rear side of the lens to create a visual illusion when the underlying image is viewed through the lenticules as a multidimensional, or lenticular, image.

Lenticular lenses are typically made of a plastic material, for example, one or more of polyester, vinyl, polycarbonate, polyvinyl chloride (PVC), polyethylene terephthalate (PET), amorphous polyethylene terephthalate (APET), and the like. Lenticular lenses can be made in a variety of ways, such as casting, embossing, and extrusion. In general, these methods for making lenticular lenses are known.

A lenticular lens typically has a gauge thickness and each lenticule has characteristic parameters that include a focal length, an arc angle, and a width, as described in, for example, US Patent No. 6,424,467. The gauge thickness of a ribbed or hemispherically-profiled lens is typically the thickness as measured from the outermost edge of the curved surface of the lens to the flat back surface of the lens. Lenticular lenses having a gauge thickness on the order of at least about 10 mils are termed "high resolution" lenticular lenses.

Preparation of the underlying image is well known in the art. The underlying image is a composite of a plurality of component images that are themselves preferably of photographic quality, or of any other quality suitable for the desired use. The component images are selected based upon the desired features of the multidimensional image. The component images are then arranged, segmented, interlaced, and mapped to create the underlying image which must be properly aligned, or arranged in correspondence, with the appropriate lenticules of the lenticular lens to produce the desired multidimensional image and visual illusion therein. Processes of arranging, segmenting, interlacing, and mapping the component images are described in, for example, US Patent Nos. 5,488,451, 5,617178, 5,847,808, and 5,896,230. The process of ensuring that the component images are properly aligned, or arranged in correspondence, with the appropriate lenticules of the lenticular lens requires consideration of the specific physical properties of the lenticular lens selected, the distance from which the multidimensional image will ordinarily be viewed, whether the component images will be viewed through an interface

including one or more physical media in addition to the lenticular lens and the air, and the specific physical properties of the one or more additional physical media. In embodiments of the present invention, compensating for the physical properties of the material of the substantially transparent container and/or of the liquid product which is at least semi-transparent when arranging, segmenting, interlacing, and mapping the component images in correspondence with the plurality of lenticules, as otherwise described in the art, may ensure that the multidimensional image is viewable substantially free of distortion.

When the component images are not properly aligned, or arranged in correspondence, with the appropriate lenticules of the lenticular lens, image degradation and image distortion, or other problems relating to clarity, sharpness, or quality of the multidimensional image, may occur. Additionally, image distortion, which is when the image appears blurred or out-of-focus, also may occur depending on the quality, material, thickness, and/or other characteristic of the lenticular lens. As used herein, the terms "degradation", "distortion", and/or other characterizations relating to clarity, sharpness, or quality of the multidimensional image are determined in the context of a viewer viewing the multidimensional image at a viewing distance which allows the viewer to perceive the visual illusion, as discussed more below.

The front face of the lenticular label comprises a multidimensional image that imparts a visual illusion such as depth and/or motion to a viewer. Generally, visual illusions may include "depth", "motion", "flipping", "zooming", and "morphing". A visual illusion of "depth" provides an image being viewed to appear as if it is in three dimensions. A visual illusion of "motion" provides an image being viewed to appear as if it is undergoing movement. A visual illusion of "flipping" provides an image being viewed to appear as if it abruptly changes its orientation or as if it disappears and reappears. A visual illusion of "zooming" provides an image being viewed to appear as if it changes size, moving either closer to or away from a viewer. A visual illusion of "morphing" provides an image being viewed to appear as if it transitions or undergoes metamorphosis to another image. Generally, a multidimensional image may impart one or more visual illusions as desired.

At a viewing distance which allows the viewer to perceive the visual illusion, the viewer is able to observe and to distinguish the intended visual illusion imparted by the multidimensional image. It is preferred that the viewing distance is from about 30 cm (about 12 inches) to about 91 cm (about 36 inches).

In an exemplary embodiment of the present invention, the multidimensional image includes images of flowers, plants, fruits, and/or combinations thereof, wherein the flowers,

plants, or fruits appear to be in three dimensions, appear to bloom or otherwise morph, and/or appear to sway in a breeze or move as if by the wind.

A visual illusion may be viewable by a viewer when the viewer and packaged article, which contains the lenticular label bearing the multidimensional image, move relative to one another. Generally, the viewer and the lenticular label may move relative to one another when a packaged article to which the lenticular label is adhered is moved by the viewer, or when the viewer moves past a packaged article to which the lenticular label is adhered, for example, when a viewer walks past a packaged article displayed on a shelf.

Importantly, the orientation of the lenticules governs the orientation of the desired visual illusion. As described above, a lenticular label includes a plurality of parallel, linear, side-by-side lenticules. A lenticular label may be adhered to a packaged article, such as a container or a bottle having a longitudinal axis, so that each of the plurality of lenticules is substantially parallel to the longitudinal axis. Thus, more particularly, a visual illusion may be viewable by a viewer when a packaged article to which the lenticular label is adhered is rotationally translated by the viewer about the longitudinal axis. Rotational translation may occur when the viewer holds the packaged article and turns, twists, or rotates the packaged article. Alternatively, a visual illusion may be viewable by a viewer when a packaged article to which the lenticular label is adhered is horizontally translated perpendicular to the longitudinal axis. Horizontal translation may occur when the packaged article itself is laterally moved by a viewer, or when a viewer laterally moves past the packaged article. Preferably, the lenticular label is oriented so that each of the plurality of lenticules is substantially vertical in direction and, thus, substantially parallel to the longitudinal axis of the substantially transparent container.

As described above, the lenticular label has a front face and a rear face. The front face of the lenticular label is adhered in a facing relationship to the rear surface of the substantially transparent container. Stated differently, the lenticular label is adhered or otherwise securely attached facedown to the second surface of the substantially transparent container. Thus, a viewer views the lenticular lens through what can be termed a lens / container material / air interface. Adhering the lenticular label may be done by any means as is known in the art, for example with a suitable adhesive, provided that the means for adhering does not interfere with or reduce the quality of the visual illusion imparted by the multidimensional image.

The rear face of the lenticular label faces up and away from the second surface of the substantially transparent container. The rear face of the lenticular label may be opaque and may contain any additional image, printing, design, or visual information, as desired, provided that such additional image, etc., does not show through on the front face of the lenticular label and/or

otherwise interfere with the multidimensional image which is contained on the front face of the lenticular label. Alternatively, the rear face of the lenticular label may be blank.

B. Substantially Transparent Container

The lenticular label of the present invention is adhered to a substantially transparent container. Further, because the lenticular label is adhered in a facing relationship to the second surface of the substantially transparent container, the substantially transparent container provides physical media in addition to the lenticular lens (*i.e.*, at least the first and second surfaces of the substantially transparent container) through which the multidimensional image can be viewed. As described above, a viewer views the lenticular lens through what can be termed a lens / container material / air interface as opposed to a conventional configuration providing a lens / air interface. It has been discovered that adhering the front face of the lenticular label in a facing relationship to the second surface of the substantially transparent container, such that the multidimensional image is viewed through at least the first and second surfaces of the substantially transparent container in a lens / container material / air interface, provides improved image quality, reducing blurring and image degradation and enhancing the overall visual and aesthetic effect of the multidimensional image.

While not intending to be limited by theory, it is hypothesized that the material of the substantially transparent container acts similarly to a corrective lens in the interface between the multidimensional image of the lenticular lens and the viewer.

The substantially transparent container may be generally a vessel, receptacle, holder, or the like, and may be of any suitable or desired shape, so long as its general structure provides an encompassing continuous wall in which a first, or front surface can be defined as being disposed generally opposite from a second, or rear surface. In one embodiment of the invention, at least one of the first surface and the second surface is arcuate in shape. Having at least one of the first surface and the second surface arcuate (*i.e.*, curved or rounded) in shape provides further enhancement of the overall visual and aesthetic effect of the multidimensional image. An example of this particular embodiment is a bottle having a generally oval or elliptical cross-sectional area. Another example of this particular embodiment includes a bottle having a generally cylindrical cross-sectional area.

The material of the substantially transparent container is of a sufficient transmittance to allow enough light to penetrate it so that objects or images beyond it can be plainly and clearly seen through it at a viewing distance which allows the viewer to perceive the visual illusion. It is preferred that the viewing distance is from about 30 cm (about 12 inches) to about 91 cm (about

36 inches). The substantially transparent container may be clear or it may be tinted in some color or shade, provided that the sufficient transmittance described above is allowed. The material of the substantially transparent container has an index of refraction in the range of about 1.3 to about 1.8.

The substantially transparent container may be made of any suitable material, for example, glass or one or more of a plastic material such as polyethylene terephthalate (PET), polystyrene (PS), polyvinyl chloride (PVC), polypropylene (PP), and high density polyethylene (HDPE).

C. Optional Liquid Product Which Is At Least Semi-Transparent

A packaged article of the present invention optionally may include a liquid product in the substantially transparent container wherein the liquid product is at least semi-transparent. The liquid product which is at least semi-transparent optionally may be included in the substantially transparent container to provide another physical medium in addition to the lenticular lens through which the multidimensional image can be viewed. Thus, a viewer views the lenticular lens through what can be termed a lens / container material / liquid product / air interface. It has been discovered that adhering the front face of the lenticular label in a facing relationship to the second surface of the substantially transparent container, such that the multidimensional image is viewed through a liquid product which is at least semi-transparent and the first and second surfaces of the substantially transparent container in a lens / container material / liquid product / air interface, provides improved image quality, reducing blurring and image degradation and enhancing the overall visual and aesthetic effect of the multidimensional image.

While not intending to be limited by theory, it is hypothesized that the material of the substantially transparent container and the liquid product which is at least semi-transparent act similarly to corrective lenses in the interface between the multidimensional image of the lenticular lens and the viewer.

As an example of an enhanced visual effect, with the addition of a liquid product which is at least semi-transparent in the substantially transparent container, the multidimensional image can appear as if it is floating three-dimensionally within the liquid product.

The liquid product which is at least semi-transparent is of a sufficient transmittance to allow enough light to penetrate it so that objects or images beyond it can be at least effectively seen through it at a viewing distance which allows the viewer to perceive the visual illusion. It is preferred that the viewing distance is from about 30 cm (about 12 inches) to about 91 cm (about 36 inches). The liquid product which is at least semi-transparent may be clear or it may be tinted

in some color or shade, provided that the sufficient transmittance described above is allowed. The liquid product which is at least semi-transparent has an index of refraction in the range of about 1.2 to about 1.7. It is preferred that the liquid product which is at least semi-transparent has an index of refraction that is similar to that of the material of the substantially transparent container, such as within about 0.5 of the other.

As used herein, the term "liquid product" includes substances that exhibit fluid characteristics, as well as gels and other viscous semi-solid substances. The liquid product which is at least semi-transparent may be, for example, a shampoo, a conditioner, a hair rinse, a hair gel styling composition, a liquid soap, and a shower gel. It is preferred that the liquid product which is at least semi-transparent is substantially free of bubbles when at chemical and physical equilibrium.

In an exemplary embodiment of the present invention, a shampoo or a conditioner, which is at least semi-transparent, is contained in a clear plastic bottle having a generally elliptical cross-sectional area, wherein the front face of the lenticular label is adhered in a facing relationship to the second surface of the plastic bottle. In this exemplary embodiment, the multidimensional image of the lenticular label includes images of flowers, plants, fruits, and/or combinations thereof, wherein the specific flowers, plants, or fruits included in the multidimensional image are representative of or complementary to a fragrance, one or more ingredients, or other characteristics of the shampoo or the conditioner contained in the plastic bottle. When a viewer views the plastic bottle at a viewing distance of about 30 cm (about 12 inches) to about 91 cm (about 36 inches) and simultaneously moves relative to the plastic bottle, the flowers, plants, or fruits appear to be in three dimensions, appear to bloom or otherwise morph, and/or appear to sway in a breeze or move as if by the wind.

D. Optional Additional Design

A packaged article of the present invention optionally may include at least one additional design on the first surface of the substantially transparent container. An additional design may include any combination of graphics, logos, text, or other visual information that may be used to provide the packaged article with decoration and improved aesthetics, and which may attract the attention of and/or convey information to a potential customer, provided that the additional design does not substantially obstruct the view of the multidimensional image of the lenticular label. The design may be, for example, a label which is adhered to the first surface of the substantially transparent container. Alternatively, the design may be, for example, screen-printed directly on the first surface of the substantially transparent container. The design may also be a

second lenticular label, provided that it does not substantially obstruct the view of the multidimensional image of the first lenticular label. In one embodiment of the present invention, the design is complementary to the multidimensional image of the lenticular label. A design may be complementary to the multidimensional image when the design comprises graphics, logos, text, or other visual information that is generally of the same or similar motif or theme as that of the multidimensional image.

E. Method of Packaging a Liquid Product Which Is At Least Semi-Transparent

Another aspect of the invention is a method of packaging a liquid product which is at least semi-transparent. The method provides a packaged article with improved aesthetics and better decoration which utilizes lenticular lenses but reduces image blurring and enhances image quality.

The method of packaging a liquid product which is at least semi-transparent comprises the steps of: (a) providing a substantially transparent container having a longitudinal axis, a first surface, and a second surface opposing said first surface; (b) providing a lenticular label having a front face and a rear face, wherein the front face comprises a multidimensional image which imparts at least one visual illusion; (c) adhering the front face of the lenticular label in a facing relationship to the second surface of the substantially transparent container; and (d) providing the liquid product which is at least semi-transparent in said substantially transparent container.

As described above, and while not intending to be limited by theory, it is hypothesized that the material of the substantially transparent container and the liquid product which is at least semi-transparent act as corrective lenses in the interface between the multidimensional image of the lenticular lens and the viewer, resulting in the benefits described above.

All documents cited in the Detailed Description of the Invention are, in relevant part, incorporated herein by reference; the citation of any document is not to be construed as an admission that it is prior art with respect to the present invention.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.